

NHDOT SPR2 PROGRAM

RESEARCH PROGRESS REPORT

Project # Statewide-SPR 26962Q		Report Period Year 2016 <input type="checkbox"/> Q1 (Jan-Mar) <input type="checkbox"/> Q2 (Apr-Jun) <input type="checkbox"/> Q3 (Jul-Sep) <input checked="" type="checkbox"/> Q4 (Oct-Dec)	
Project Title: Iron Oxide Deposits on Highway Construction Projects			
Project Investigator: James Degnan Phone: 603 226 7826		E-mail: jrdegan@usgs.gov	
Project Start Date: September 21, 2016	Project End Date: September 30, 2018	Project schedule status: <input checked="" type="checkbox"/> On schedule <input type="checkbox"/> Ahead of schedule <input type="checkbox"/> Behind schedule	

Brief Project Description:

Rock fill material placed in contact with wet areas adjacent to roadways has been associated with the mobilization of high concentrations of iron and iron fouling in surface water. Collection of new data to characterize iron fouling, as well as statistical and geochemical modeling can improve our understanding of iron fouling potential.

Progress this Quarter (include meetings, installations, equipment purchases, significant progress, etc.):

- 374 rock cut database sites examined in desk top reconnaissance and assigned 227 regional variables
- 66 of 374 rock cuts had indications of Fe seen within 2000' in desktop examination
- 55 sites with indications of Fe precipitation and biofouling visited, 29 had Fe at time of visit
- Some sites with Fe precipitation and biofouling had low DO and pH (3.3 min) and high SC
- Visited sites with Fe were within mapped Berwick, Rangle, Massabessic and Partridge Formations
- Preliminary regression shows excellent model fit with flow length, topography derivatives, and stratified drift
- Dr. Qian Yu (UMASS GIS) is looking into applying for a grant to acquire high-res imagery to contribute to the project
- District engineers have been contacted for input on the location and character of Fe fouling

Items needed from NHDOT (i.e., Concurrence, Sub-contract, Assignments, Samples, Testing, etc...):

If available, GIS data layers of the locations and elevations of culverts and extent of road way fill within 2000' of rock cuts. A discussion and/or reports, plans, well and boring logs documenting intended function and water quality data for retention ponds at Exit 9 on I 93, adjacent to Mirror Lake and I 93 (road cut 010), at the Granite Lake Rd. exit on Rt. 9 in Nelson.

Anticipated research next three(3) months:

USGS internal 10% project review is scheduled on 1/31/2017. District engineers have been contacted to request feedback on Fe occurrence. Collection of existing data, independent variable identification and regression will continue.

Circumstances affecting project:

The start of the project was about one quarter behind the proposed timeline in the work plan. The second half of field reconnaissance has been delayed due to early snow cover

Tasks (from Work Plan) work plan element from proposal	Planned % Complete	Actual % Complete
Project planning	100	100
Data collection	66.6	33.3
Database construction	40	20
Modeling	0	10
Data analysis	0	5
Internal reviews	0	0
Data and model archive	0	0
Report	0	2